

**A NEW SPECIES OF THOMISID SPIDER  
(ARANEAE, THOMISIDAE) FROM THE  
SOCIETY ISLANDS WITH A DESCRIPTION  
OF THE MALE OF *MISUMENOPS MELLOLEITAOI***

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**ABSTRACT.** This study revises the status of crab spiders (Araneae, Thomisidae) endemic to the Society Islands, a volcanic archipelago situated in the southern Pacific Ocean. Only one species, *Misumenops melloleitaoi* Berland 1934, known from a single female and immature, was previously recorded from Tahiti (the largest island of the Society archipelago). Field surveys (1999–2003) and examination of material in natural history collections show that thomisid spiders occur in four islands of the Society archipelago and are recognized as two endemic species. *Misumenops temihana* is described as new from the islands of Raiatea and Huahine. This paper further presents the first description of the male of *M. melloleitaoi* Berland 1934, and extends the range of this species to include multiple localities on the islands of Tahiti and Moorea. *Misumenops melloleitaoi* can be easily distinguished from *M. temihana* by the presence of two short black lines on the ventral surface of femur and patella I and II which are lacking in *M. temihana*.

**Keywords:** Polynesia, spider, Tahiti, Thomisidae, taxonomy

Invertebrate faunas of remote oceanic islands are generally characterized as taxonomically depauperate at the familial and generic levels yet often harbor exceptionally high numbers of endemic species (Gressitt 1961; Gillespie & Roderick 2002). The extremes of this pattern are exemplified in the Hawaiian Islands where approximately 10% of all known spider families occur naturally, yet an extremely high proportion of native spider species (~98%) are considered endemic to the archipelago (Nishida 1997). The unique biotic composition of the Hawaiian Islands has drawn considerable attention to the importance of documenting its native invertebrate fauna in the face of increasing threats from invasive species and habitat destruction (Howarth & Mull 1992; Gillespie 1999). While it is certain that many Hawaiian species remain to be described, the archipelago's native spider fauna is undoubtedly the most thoroughly studied among all Polynesian archipelagos (Gillespie et al. 1998). In contrast, little is known of the spiders of the Society Islands,

another remote Polynesian archipelago located ~4000 km south of the Hawaiian Islands.

The Society archipelago consists of six high islands, the largest of which is Tahiti (Fig. 1). Knowledge of the Society Islands' spider fauna is fragmentary, and stems predominantly from descriptions by Berland (1934, 1942) based on the small amount of material collected during the Pacific Entomological Survey in 1928 by A.M. Adamson and the Mangarevan Expedition in 1934 by E.C. Zimmerman, both in association with the Bernice Pauahi Bishop Museum. Since then, the spider fauna of the Society Islands has received little taxonomic attention with the exception of a revision of the genus *Tetragnatha* (Gillespie 2003) in which three new endemic species were described. Given that the biota of the Society Islands, in common with that of other remote islands (Myers et al. 2000), is threatened by invasive species and habitat destruction (Meyer 2004), it is critical to document the diversity and distribution of species endemic to this archipelago.

Representatives of the family Thomisidae occur in several remote island archipelagos across the central Pacific Ocean. The majority of described thomisid species from this region

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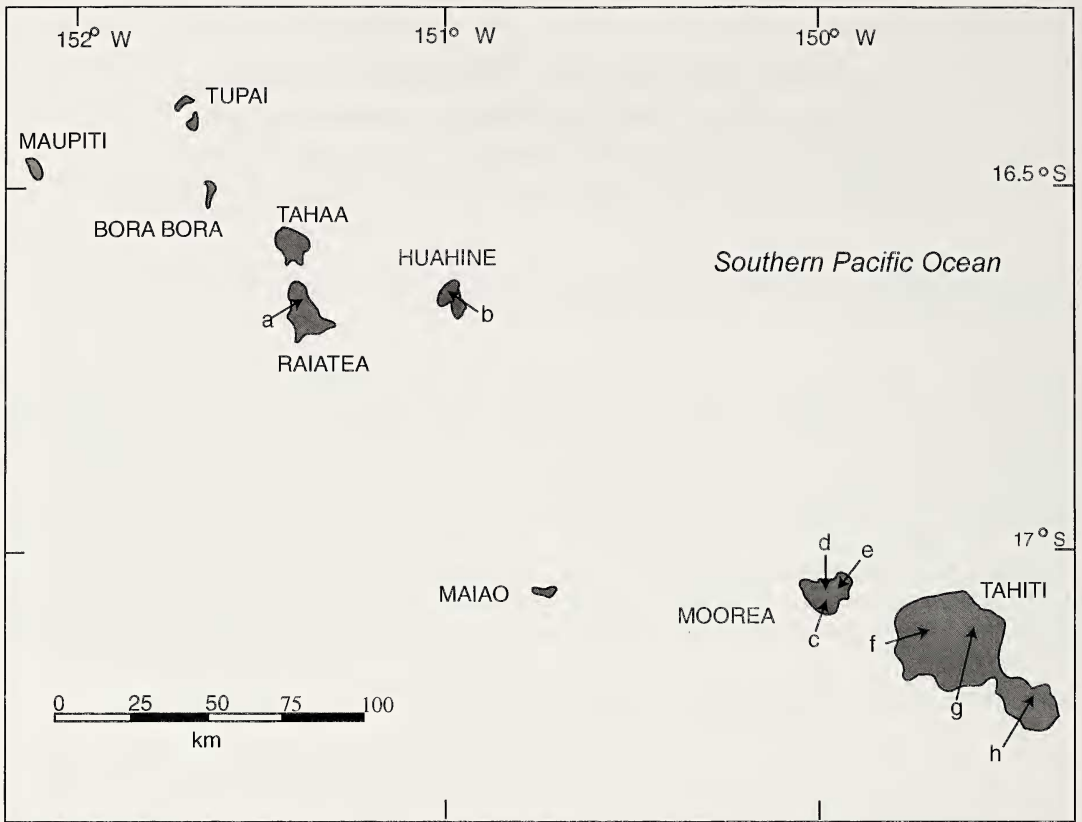


Figure 1.—Map of Society Islands archipelago, with arrows indicating localities where specimens were collected during recent expeditions (1999–2003): a = Temihana Plateau, Raiatea; b = Mt. Turi, Huahine; c = Le Belvedere Lookout Trail, Moorea; d = Mt. Mouaputa, Moorea; e = Vaire-Paopao Trail, Moorea; f = Mt. Aorai, Tahiti; g = Mt. Marau, Tahiti; h = summit, Belevedere Rd., Tahiti-Iti.

occur in the Hawaiian archipelago, with 20 endemic species, 16 of which are currently assigned to the genus *Misumenops* F.O. P.-Cambridge 1900 (Suman 1970; Platnick 2006). Species of this cosmopolitan genus also occur in three other Polynesian hot-spot archipelagos: the Marquesas, the Austral Islands and Society Islands. From each of these three archipelagos, a single, endemic *Misumenops* species is recognized representing the only known thomisid. Berland (1934) described *M. pallida* from one female and one immature specimen collected in Vaipuarii Valley, Tahiti Island in 1928. Subsequently, C.F. de Mello-Leitão notified Berland that *M. pallida* was a junior secondary homonym of *M. pallidus* (Keyserling 1880) (Berland 1942). Accordingly, Berland (1942) selected *M. melloleitaoui* as a replacement name. No further records of thomisids from the Society Islands, either native or introduced, were found in the literature

during the preparation of this manuscript (Platnick 2006).

As part of this study, Garb (2003) and Garb & Gillespie (2006) have investigated phylogenetic relationships between the Society Islands' *Misumenops* and congeners found in other Polynesian archipelagos using both mitochondrial and nuclear gene sequences, including specimens examined here. The present study revises taxonomic knowledge of the thomisid spiders from the Society Islands, in part based on specimens found during recent expeditions (years 1999–2003) on four islands (Raiatea, Huahine, Moorea and Tahiti), in addition to material housed in natural history collections.

#### METHODS

Descriptions were based on specimens previously collected from the Society Islands and deposited in the Bernice Pauahi Bishop Mu-

seum, Honolulu (BPBM) as well as material recently collected by the author and/or by colleagues (listed below) during several expeditions to Tahiti as well as to Moorea, Raiatea, Huahine and Bora Bora (Fig. 1). Live specimens were found in the mountainous interior of all of these islands except Bora Bora, at elevations ranging from 350–1240 m above sea level, and collected by beating vegetation onto a sheet, noting the plant species whenever possible. These specimens were initially preserved in 95% ethanol, and subsequently transferred to 75% ethanol. All specimens were visually examined using a Leica Wild M3Z Kombi stereo-microscope fitted with a camera lucida. All available adult specimens were examined in order to determine diagnostic characters as well as to assess the range of variability within a taxon. Measurements were recorded in millimeters using an eyepiece micrometer scale. Vellum illustrations were scanned into Adobe Photoshop® and saved as TIFF files.

**Characters examined.**—Length and width measurements were taken of the cephalothorax and abdomen from a dorsal view, with the width determined at its widest point. Length for each leg segment was measured at the dorsal margin. The distribution and arrangement of macrosetae were recorded for each leg article (legs I–IV) as well as for the cephalothorax. Eye arrangement, specifically the distances between the PME, AME, PLE and ALE were measured. Male pedipalps and legs of some specimens were excised (later retained in microvials with specimens) to examine at greater magnification. The shape and degree of sclerotization were examined for both the embolus and retrolateral tibial apophysis. External female genitalia were examined, including shape and size of the epigynal guide pocket, intromittent orifices, spermathecae and spermathecal apophyses. Specimen coloration and color patterning were described as observed in living and preserved specimens. The presence of thin, darkly pigmented lines, as similarly found ventrally on the femora, patella and tibia of Hawaiian *Misumenops* species (Suman 1970), was also recorded.

**Terminology.**—Abbreviations related to morphological terminology are as follows: retrolateral tibial apophysis (RTA); ventral tibial apophysis (VTA); anterior median eyes (AME); anterior lateral eyes (ALE); posterior

median eyes (PME); posterior lateral eyes (PLE). Terminology relating to the carapace follows terms established by Schick (1965). Specimens are deposited in the Bernice Pauahi Bishop Museum (BPBM), Honolulu, and the Essig Museum of Entomology at the University of California (EMUC). The contraction JEG-### (e.g., JEG-461), indicates the code number of individual specimens from the author's collection database. Collections were made by the author (JEG), Rosemary Gillespie (RGG), George Roderick (GKR), Joseph Spagna (JS), Miquel Arnedo (MA), Steve Lew (SL), Leo Shapiro (LS), Alexa Bely (AB) or Elin Claridge (EC).

## TAXONOMY

### Family Thomisidae Sundevall 1833 Genus *Misumenops* F.O. P.-Cambridge 1900

**Type species.**—*Misumena maculissparsus* Keyserling 1891, by original designation.

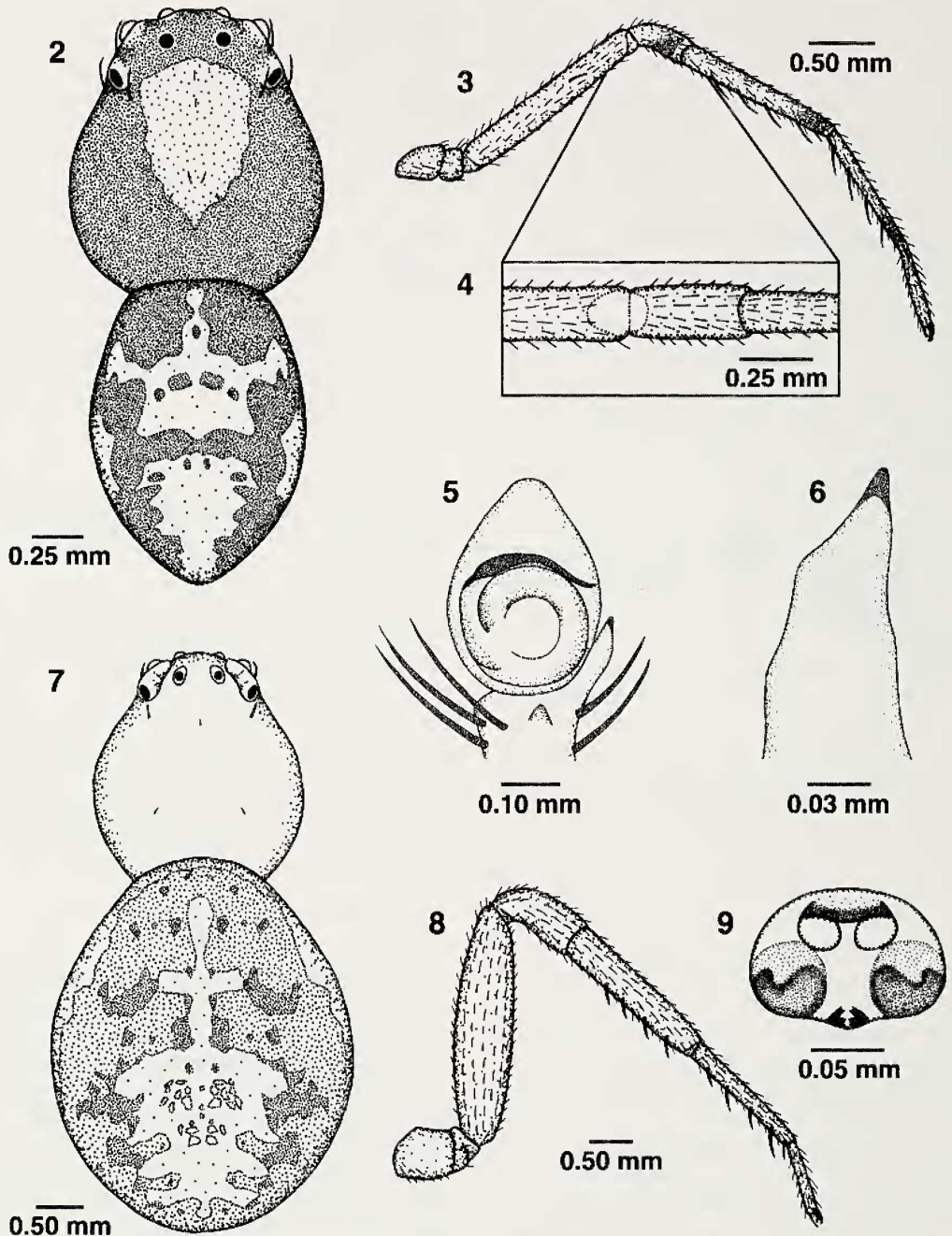
**Remarks.**—The genus *Misumenops* consists of 108 named species and has a nearly cosmopolitan distribution, occurring in North and South America, Europe, Asia, Africa, and across islands in the central Pacific. The genus is particularly diverse in North and South America, where approximately 70% of the described species occur.

#### *Misumenops temihana* new species Figs. 2–9, 18

**Type material.**—FRENCH POLYNESIA: Society Islands: Holotype male, Raiatea Island, Temihana Plateau, 780 m, 16.78°S, 151.45°W, 13 July 2000, MA, LS, and AB, (BPBM, JEG-461). Allotype female, locality and collecting data as for holotype (BPBM, JEG-459). Paratypes: *Raiatea*: 2 ♂ (JEG-467; 472) 4 ♀ (JEG-460; 465; 470; 471), 5 immatures (JEG-462; 464; 468; 469), Temihana Plateau, 780 m, 16.78°S, 151.45°W, 13 July 2000, MA, SL, LS, and AB (EMUC); *Huahine*: 2 ♀ (JEG-700; 701), Mt. Turi, 650 m, 16.71°S, 151.02°W, August 2003, EC (EMUC).

**Etymology.**—The specific epithet, a noun in apposition, refers to the Temihana Plateau of Raiatea Island, the type locality of this species.

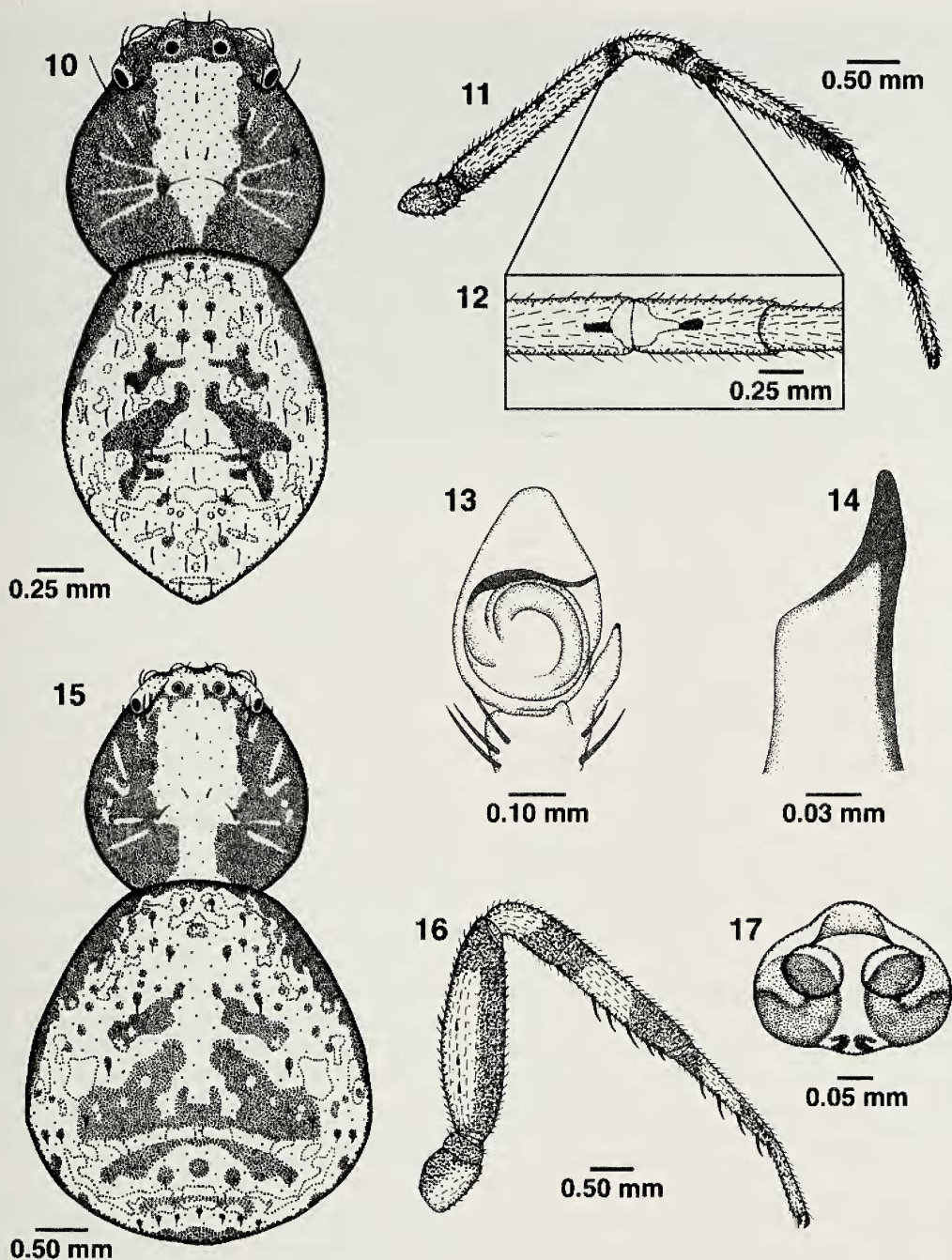
**Diagnosis.**—*Misumenops temihana* resembles *M. melloleitai* but does not possess the



Figures 2–9.—*Misumenops temihana* new species. Male holotype (JEG-461): 2. Body, dorsal view; 3. Left leg I, prolateral surface; 4. Expanded view of ventral surface of distal portion of femur and patella I; 5. Left palp, ventral view; 6. Left tibial apophysis, retrolateral view. Female allotype (JEG-459): 7. Body, dorsal view; 8. Left leg I, prolateral surface; 9. Epigynum, ventral view.

two short black lines on the ventral surface of femur and patella I and II found in the male and female *M. melloleitaoui* (compare Figs. 4 and 12).

**Description.**—*Holotype male* (Figs. 2–6): Cephalothorax length 1.32; cephalothorax width 1.25; abdomen length 1.50; abdomen width 1.07. Carapace (Fig. 2) dark brown ex-



Figures 10–17.—*Misumenops melloleitai* Berland 193.: Male from Tahiti, collected at summit of Mt. Marau, 1240m, coll. by JEG, 6 July 2000 (JEG-449): 10. Body, dorsal view; 11. Left leg I, prolateral surface; 12. Expanded view of ventral surface of distal portion of femur and patella I; 13. Left palp, ventral view; 14. Left tibial apophysis, retrolateral view. Female (with same collecting data as male; JEG-458): 15. Body, dorsal view; 16. Left leg I, prolateral surface; 17. Epigynum, ventral view.

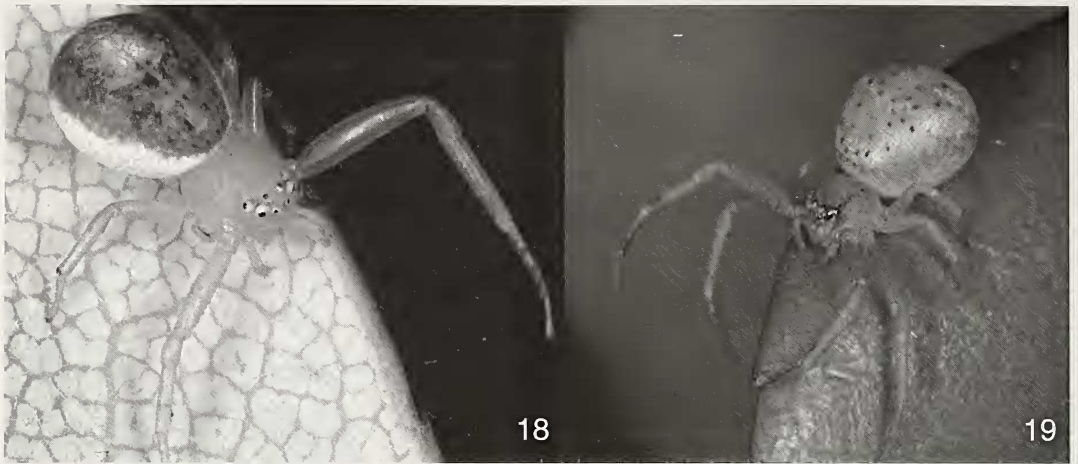


Figure 18.—*Misumenops temihana* new species, female allotype (JEG-459) from Temihana Plateau, Raiatea Island. Figure 19.—*Misumenops melloleitaoui* Berland, female (JEG-484) from Mt. Mouaputa, Moorea Island.

cept for mesodiscus and metadiscus, which are yellow (yellow-green in life); sternum, labium and endites brown; distal tips of endites without pigment. Dorsum of abdomen (Fig. 2) predominately yellow with dark brown lateral bands and incomplete transverse band, "H-shaped." Venter and spinnerets uniformly light yellow with no patterning. Ocular area, clypeus and chelicerae dark brown. Eyes on yellow tubercles; ALE and PLE tubercles more pronounced; ALE and PLE approximately  $2 \times$  size of AME and PME. Distance between PME 0.21; PLE 0.71; AME 0.17; ALE 0.57. Carapace with few, short setae; prominent, long, bilaterally paired setae posterior of PLE; long setae on clypeus and chelicerae. Abdomen with sparse, short setae. Legs and pedipalps, uniformly yellow (green in life). Leg I (Fig. 3): femur 1.55; patella 0.37; tibia 1.27; metatarsus 1.11; tarsus 0.55. Leg II: femur 1.51; patella 0.58; tibia 1.44; metatarsus 1.34; tarsus 0.92. Leg III: femur 1.11; patella 0.23; tibia 1.16; metatarsus 0.66; tarsus 0.51. Leg IV: femur 1.15; patella 0.26; tibia 0.70; metatarsus 0.59; tarsus 0.49. Femur I, 1 prolateral robust macroseta; femora II–IV, each with 1 dorsal macroseta. Claw tufts sparse and simple. Palp (Fig. 5): femora with series of short setae on prolateral and ventral surfaces; 1 short macroseta on disto-dorsal margin of patellae; paired, long macrosetae on prolateral and retrolateral tibial surface. Embolus originates near prolateral margin of tegulum; embolus tip, long and narrow, slightly

curved at tip. VTA, short, undeveloped. RTA, without pronounced notches on ventral margin, slender and sclerotized at tip.

*Allotype female* (Figs. 7–9, 18): Female approximately  $2 \times$  length of male; cephalothorax length 2.04; cephalothorax width 2.07; abdomen length 3.70; abdomen width 3.00. Carapace (Fig. 7), including ocular area, clypeus and chelicerae uniformly yellow, without pattern (bright green in life). Sternum, labium and endites uniformly yellow (bright green in life). Dorsum of abdomen, yellow (bright yellow in life) with two wide yellow-brown longitudinal bands (red in life) meeting at anterior and posterior end of abdomen, forming an ovoid pattern; thin black crimped stripes on top of wide, brown (red in life) stripes. Sides and venter uniformly yellow. Eye tubercles bright yellow in life, ALE and PLE, approximately  $2 \times$  median eyes, ALE slightly larger than PLE. Distance between PME 0.23; PLE 1.00; AME 0.38; ALE 0.79. Distribution and morphology of setae on cephalothorax, chelicerae and abdomen similar to male. Legs and palps yellow, without stripes, bright green in life. Leg I (Fig. 8): femur 2.83; patella 0.92; tibia 1.92; metatarsus 1.50; tarsus 0.75. Leg II missing on both sides. Leg III: femur 1.59; patella 0.75; tibia 1.15; metatarsus 0.73; tarsus 0.50. Leg IV: femur 1.83; patella 0.75; tibia 1.12; metatarsus 0.81; tarsus 0.49. Femur I without macrosetae; dorsum of femora III and IV each with one macroseta. Large, robust, sclerotized macrosetae (spines) ventrally on

tibia and metatarsus. Tibia I ventrally with 4 pairs robust spines; metatarsus I ventrally with 5 pairs of spines. Claw tufts sparse, tarsal claw with large elongate distal tooth and 3 short internal teeth of equal length. Palp with paired, long macrosetae on prolateral and retrolateral tibial surface. Epigynum (Fig. 9): hood of guide pocket curves slightly towards the posterior of epigynum; intromittent orifices close together and anterior to spermathecae, width of spermatheca approximately 2 × width of intromittent orifices, spermathecal apophyses visible at posterior of epigynum as small sclerotized, opposing "comma" shapes arched towards each other.

**Variation.**—*Males* ( $n = 3$ ): carapace can be mostly yellow (green in life), with two brown stripes; sternum, labium and endites can be yellow (green in life).

*Females* ( $n = 7$ ): variation in color pattern on dorsum of abdomen, particularly in presence of black pigment; some females with single dorsal macroseta on femur I, females may have 4–7 pairs of robust spines ventrally on tibia I.

**Natural history.**—*Misumenops temihana* was collected in the montane-scrub forest of the Temihana plateau (Raiatea Island) on a diversity of native plants, adopting the thomisid habit of remaining in a stationary position upon vegetation in order to ambush prey. The bright green coloration of females of this species may provide camouflage as they await prey on foliage.

**Distribution.**—The present distribution of this species is restricted to the Temihana Plateau of Raiatea Island (780 m) and the summit of Mt. Turi (650 m) on Huahine Island in the Society Islands.

#### *Misumenops melloleitaoi* Berland 1942

Figs. 10–17, 19

*Misumenops pallida* Berland 1934:98, Figs. 1–5 [junior secondary homonym of *Misumenops pallida* (Keyserling, 1880)].

*Misumenops melloleitaoi* Berland 1942:6 (replacement name for *M. pallida* Berland 1934).

**Material examined.**—FRENCH POLYNESIA: *Tahiti*: Holotype female, 1 immature female paratype, Vaipuarrii Valley, 17.66–17.75°S, 149.50–149.58°W, 1928, M. Adamson (BPBM, type #619).

**Other material examined.**—FRENCH POLYNESIA: *Tahiti*: 2 ♀, 1 immature, Tao-

hiri, Mt. Aorai Trail, 17.58–17.66°S, 149.47–149.50°W, 1100 m, 12 September 1934, E.C. Zimmerman (BPBM); 1 ♀, Mt. Aorai, 17.58–17.66°S, 149.47–149.50°W, 1500–1800 m, 15 September 1934, E.C. Zimmerman (BPBM); 1 ♀, Fare Rau, Ape-Aorai Trail, 17.58–17.66°S, 149.47–149.50°W, 27 April 1959, N.L.H. Krauss (BPBM); 2 immatures (JEG-510; 518), Mt. Aorai, 1700 m, 17.61°S, 149.50°W, November 1999, RGG and GKR (EMUC); 1 ♂ (JEG-356), 3 ♀ (JEG-355; 358; 359), 7 immatures (JEG-354; 357; 360–364), Tahiti Iti, Le Belvedere Rd. summit, Mt. Teatara, 650 m, 17.79°S, 149.25°W, 24 June 2000, JEG and JS (EMUC); 1 ♂ (JEG-369), 3 immatures (JEG-365; 366; 368), Tahiti Iti, Le Belvedere Rd. summit, Mt. Teatara, 650 m, 17.79°S, 149.25°W, 7 July 2000, JEG and JS (EMUC); 4 ♂ (JEG-428; 429; 449; 457), 4 ♀ (JEG-453; 454; 456; 458), 24 immatures (JEG-427; 430–448; 450–452; 455), Mt. Marau summit, 17.61°S, 149.55°W, 1240 m, 6 July 2000, JEG, RGG, GKR, JS, MA, SL, LS, and AB (EMUC). *Moorea*: 1 ♀, 17.48–17.58°S, 149.75–149.92°W, 500–700 m, 25 September 1934, E.C. Zimmerman (BPBM); 1 ♂ (JEG-352), 2 ♀ (JEG-350; 351), 1 immature (JEG-353), Vaire-Paopao Trail summit, 325 m, 17.52°S, 149.80°W, 19 June 2000, JEG, RGG, JS, and GKR (EMUC); 3 ♂ (JEG-370; 371; 380), 1 ♀ (JEG-390), 7 immatures (JEG-372; 373; 375–378; 385), Le Belvedere Lookout Trail, 17.53–17.55°S, 149.82–149.83°W, 550 m, 27 June 2000, JEG and JS (EMUC); 1 ♂ (JEG-395), 2 ♀ (JEG-393; 396), 2 immatures (JEG-391; 392), Le Belvedere Lookout Trail, 17.53–17.55°S, 149.82–149.83°W, 550 m, 2 July 2000, coll. JEG and JS (EMUC); 1 ♂ (JEG-483), 1 ♀ (JEG-484), Mt. Mouaputa, 840 m, 17.53°S, 149.81°W, 11 July 2000, GKR, MA, SL, LS and AB (EMUC).

**Diagnosis.**—Male and female with short, thin black line at the distal edge of ventral surface of femora I and II, similar line at proximal edge ventrally on patellae I and II.

**Description.**—*Male* (Figs. 10–14): Cephalothorax length 1.28; cephalothorax width 1.13; abdomen length 1.75; abdomen width 1.31. Carapace (Fig. 10), dark brown except for mesodiscus and metadiscus which are yellow (green in life), yellow coloration continues from metadiscus towards posterior margin of carapace in the shape of an inverted trian-

gle. Sternum, labium and endites reddish-brown; anterior margin of endites and labium pale yellow. Abdomen: dorsum predominately light brown with white and black mottling, sides of abdomen dark brown; venter yellow with broad, dark longitudinal stripe posterior to epigastric furrow; region anterior to epigastric furrow and bordered by book lungs, reddish in color. Spinnerets yellow, with reddish bands. Ocular area, clypeus, and chelicerae dark brown. Distal margin of chelicerae white. Eye tubercles yellow, AME and PME approximately equivalent in size, PLE and ALE  $2 \times$  size of median eyes, with ALE slightly larger than PLE. Distance between PME 0.17; PLE 0.68; AME 0.12; ALE 0.45. Carapace, clypeus and chelicerae with few long macrosetae and numerous short setae. Abdomen covered with short, robust setae. Legs I and II yellow-brown, with wide red bands on distal margin of femur, tibia and metatarsus I and II; legs III and IV pale yellow. Ventral surface of femora I and II with short, thin black line,  $\sim 0.13$  at distal edge, similar line at proximal edge ventrally on patellae I and II (Fig. 12). Leg I (Fig. 11): femur 2.07; patella 0.47; tibia 1.67; metatarsus 1.33; tarsus 0.67. Leg II: femur 2.25; patella 0.66; tibia 2.14; metatarsus 1.73; tarsus 0.89. Leg III: femur 1.13; patella 0.34; tibia 1.04; metatarsus 0.44; tarsus 0.39. Leg IV: femur 1.28; patella 0.38; tibia 1.08; metatarsus 0.42; tarsus 0.37. Femur I with 2 macrosetae on prolateral surface, 1 macroseta on dorsum; femora II-IV, each with one macroseta on dorsal surface; dorsum of tibia III with one macroseta, tibia IV with two macrosetae on dorsal surface; claw tufts sparse. Palp (Fig. 13): 1 short macroseta on disto-dorsal margin on patellae; paired, long macrosetae on prolateral and retrolateral tibial surface. Embolus similar to *M. temihana*, as well as the short undeveloped VTA. RTA similar to *M. temihana* but with narrower dorsal tip and sclerotization continuing along dorsal margin of RTA.

*Female* (Figs. 15-17): Cephalothorax length 2.00; cephalothorax width 2.14; abdomen length 3.45; abdomen width 3.28. Carapace (Fig. 15) dark brown laterad, center yellow (green in life). Sternum, uniformly yellow; labium and endites pale yellow-brown. Color of abdomen, and spinnerets similar to male. Eye tubercles and median ocular area yellow; clypeus and chelicerae light

brown, distal margin of chelicerae white. AME and PME approximately equal in size, PLE and ALE  $2 \times$  size of median eyes, with ALE slightly larger than PLE. Distance between PME 0.28; PLE 1.03; AME 0.24; ALE 0.76. Carapace with few, short setae; abdomen with very few short setae; clypeus and chelicerae with a few longer macrosetae. Legs I and II yellow, with thick brown bands. Short, thin black line, at distal edge ventrally on femora I and II; similar short black line on proximal edge of femora, ventrally on patellae I and II. Legs III and IV predominantly yellow, with brown stripes. Leg I (Fig. 16): femur 2.58; patella 0.91; tibia 1.75; metatarsus 1.42; tarsus 0.92. Leg II: femur 2.78; patella 1.16; tibia 1.87; metatarsus 1.55; tarsus 0.81. Leg III: femur 1.48; patella 0.52; tibia 0.93; metatarsus 0.72; tarsus 0.67. Leg IV: femur 1.41; patella 0.60; tibia 1.00; metatarsus 0.71; tarsus 0.64. Femur I with 2 prolateral, and 1 dorsal macrosetae, 1 macroseta on dorsal surface of II-IV. Tibia I and metatarsus I ventrally bearing 5 pairs of robust spines. Claw tuft sparse, tarsal comb with elongate distal tooth and 3 short equal length internal teeth. Epigynum (Fig. 17): hood of guide pocket arched anteriorly; intermittent orifices wider apart than in *M. temihana*, more than half of width of spermathecae, spermathecal apophyses visible posteriad of epigynum as small sclerotized, opposing "comma" shapes, but arched away from each other.

**Variation.**—*Male* ( $n = 13$ ): Color variable, sternum may be yellow and sometimes outlined in a reddish coloration; venter sometimes with less pigmentation, without coloration around spinnerets; red bands on legs I and II may be less pronounced and absent on femora; chelicerae in one individual uniformly yellow.

*Female* ( $n = 15$ ): Considerable color variation, in life ranging from almost entirely yellowish-brown to individuals with a bright green cephalothorax and yellowish abdomen. Some individuals with carapace stripes of varying widths, some without stripes. Leg bands prominent in some individuals, absent in others, others with legs I and II nearly all brown; some with reddish bands around spinnerets, most without; venter frequently uniformly yellow. Femur I sometimes with 2-3 prolateral macrosetae and 1-2 dorsal macrosetae.



**Natural History.**—Primarily found on native plants such as *Metrosideros* spp. *Cyathea* spp., and *Dicranopteris* sp., but also on the non-native mape, *Inocarpus fagifer* (Parkinson) Fosberg.

**Distribution.**—This species is distributed across the islands of Moorea and Tahiti, but appears to be restricted to montane, forested areas and is found in greater abundance at higher elevations.

**Remarks.**—Material in the BPBM collected by E.C. Zimmerman included one vial containing 2 females and 1 immature labeled as “Taohiri, Mt. Aorai Trail, Tahiti, Society IIs. IX-12-34, 3500 ft.,” and containing a second label written with the following: “*Misumenops tahitiensis* Berland (nom nov. pour *M. pallida* Berland 1934, preoccup.)” This label suggests that Berland may have considered *M. tahitiensis* as a replacement name for *M. pallida* before selecting *M. melloleitaoi*. No records of *M. tahitiensis* were found in Platnick (2006).

#### DISCUSSION

This study extends the known range of thomisid spiders within the Society Islands (previously recorded from a single locality in Tahiti) by providing the first records of thomisids for the islands of Raiatea, Huahine and Moorea (Fig. 1). From the recently collected material and Bishop Museum collections, two endemic species are recognized in the Society Islands: *Misumenops melloleitaoi* and *M. temihana*. The range of the previously described *M. melloleitaoi* is expanded to include additional localities across Tahiti and the island of Moorea. This species is revised here to include the first description of the male. A newly described second species, *M. temihana*, is restricted to the islands of Raiatea and Huahine. The two species are most easily and consistently diagnosed by the presence of a short, thin black line on the ventral surface of femur and patella I and II of *M. melloleitaoi* (males and females) that are absent in *M. temihana*.

The overall somatic and genitalic morphology of *M. melloleitaoi* and *M. temihana* is similar. However, the two species exhibit considerable color variation, particularly the females of *M. melloleitaoi*, which can range from yellow-brown to bright green. The substantial color variability observed in *M. mel-*

*leitaoi* may reflect an ecological adaptation to local conditions that differs among populations. Relatively slow color change has been documented in studies of certain thomisid species (Oxford & Gillespie 1998; Chittka 2001; Heiling et al. 2003), with individuals demonstrating a chameleon-like ability to resemble their surroundings through color mimicry. Accordingly, a plastic response by individuals to environmental cues is an alternative explanation of the color variation.

*Misumenops melloleitaoi* and *M. temihana* appear to be in greatest abundance in high elevation habitats that contain native plant species. For example, *M. melloleitaoi* was primarily collected from high elevation montane forests (550–1240 m), on native plants such as *Metrosideros* spp. *Cyathea* spp., and *Dicranopteris*. It was also found at lower elevations in Moorea (~350 m) on the non-native Tahitian chestnut, *Inocarpus fagifer*, but appeared far more abundant at the higher elevation localities, particularly at 1240 m on Mt. Marau, Tahiti. *Misumenops temihana* was found in one of the remaining tracts of native forest on Raiatea, the Temihana Plateau (780 m), an unusual scrub-montane forest dominated by native hala (*Pandanus tectorum*). *Misumenops temihana* was also found on the summit of Huahine Island, Mt. Turi (650 m). It is difficult to draw conclusions regarding the past distributions of the Society Islands' thomisids because historical records are virtually non-existent for these spiders. However, because these spiders are presently found in association with native habitats at high elevations, their distribution suggests that they may have been more widespread prior to the conversion of lower elevation native forests for agriculture, initially for the cultivation of taro.

Investigation of phylogenetic relationships between *M. melloleitaoi* and *M. temihana* as well as to other Polynesian *Misumenops*, based on mitochondrial and nuclear DNA sequences, indicated that the two Society Island species are closely related to each other but also are genetically quite distinct (Garb 2003). This result suggests that *M. melloleitaoi* and *M. temihana* are sister species that likely diverged in association with the formation of new islands that provided geographic isolation. Garb (2003) and Garb & Gillespie (2006) also found that the Society

Island taxa are most closely related to *Misumenops* species found in the Marquesan and Hawaiian Islands as well as to North American *Misumenops* species. Though the Marquesan *Misumenops delmasi* Berland 1927 most closely resembles the Society Islands' *Misumenops*, phylogenetic analyses using mitochondrial DNA did not unite the Society and Marquesan species as monophyletic (Garb & Gillespie 2006). However, analyses of nuclear DNA sequences did support a sister group relationship between *M. delmasi* and the Society Islands' *Misumenops* (Garb 2003). In contrast, the Society Islands' *Misumenops* are much more distantly related to *M. rapaensis* Berland 1934, which is the only representative of the family occurring in the geographically closer Austral archipelago (Garb & Gillespie 2006). These results agree well with the conclusions of Lehtinen (1993), who hypothesized the close affinities between the Society, Marquesan, Hawaiian, and North and South American *Misumenops*. Nevertheless, relationships among these groups remain somewhat uncertain and will require further examination of the nearly cosmopolitan genus *Misumenops*.

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